

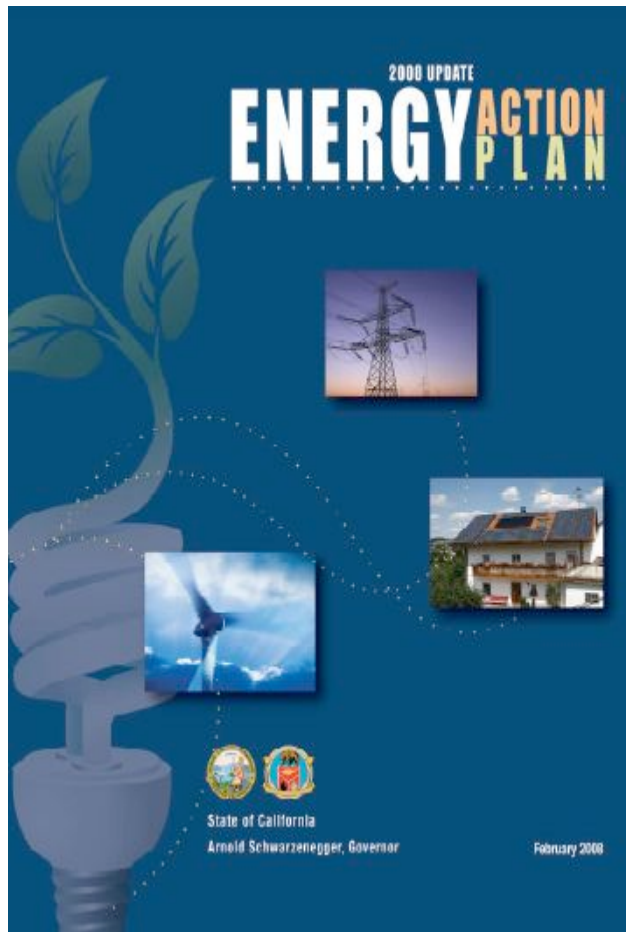
California Solar Policy and Programs



Molly Tirpak Sterkel
California Public Utilities Commission
Solar Power 2008
San Diego, CA
October 2008



Energy Action Plan: “Loading Order”



- Energy efficiency
- Demand response
- Distributed generation
- Renewable generation
- Cleanest available fossil resources



CA Solar Policies & Programs

Solar Project Type	Policies	Programs
Customer-Side Generation	<ul style="list-style-type: none"> • Upfront Incentives • Projects sized to customer load (1MW) • Solar projects reduce demand (like EE) • Net Energy Metering - full retail rates • RECs retained by customer (kWh user) • Exempt from interconnection charges 	California Solar Initiative (CSI)*
Wholesale Generation/ or Utility Procurement	<ul style="list-style-type: none"> • Various contract paths, price depends on contract • Projects designed as net export to grid • Energy and Capacity used for utility procurement obligations • RECs owned by energy buyer • Projects interconnect with CPUC Rule 21 and/or FERC SGIP rules 	Renewable Portfolio Standard
		Feed-In Tariffs (< 1.5 MW)
		Utility Ownership Proposals
		Qualifying Facility Contracts



CA Solar Installations

Solar Project Type	Programs	Installed	Pipeline
Customer -Side Generation	California Solar Initiative (CSI)	121 MW - CSI <i>(392 MW - All programs statewide)</i>	169+ MW
Whole Generation/ or Utility Procurement	Renewable Portfolio Standard	~	3615+ MW
	Feed-In Tariffs < 1.5 MW	~	~
	Utility Ownership Proposals	~	300+ MW
	Qualifying Facility Contracts	356 MW	~
Total		748 MW	4084+ MW

Sources: CEC Grid Tied PV Summary (April 2008), CEC Power Plant Database (2007), CPUC Staff Progress
 4 Report on CSI (October 2008), CPUC 20% by 2010 RPS Project Tracking Spreadsheet (3rd Quarter 2008)



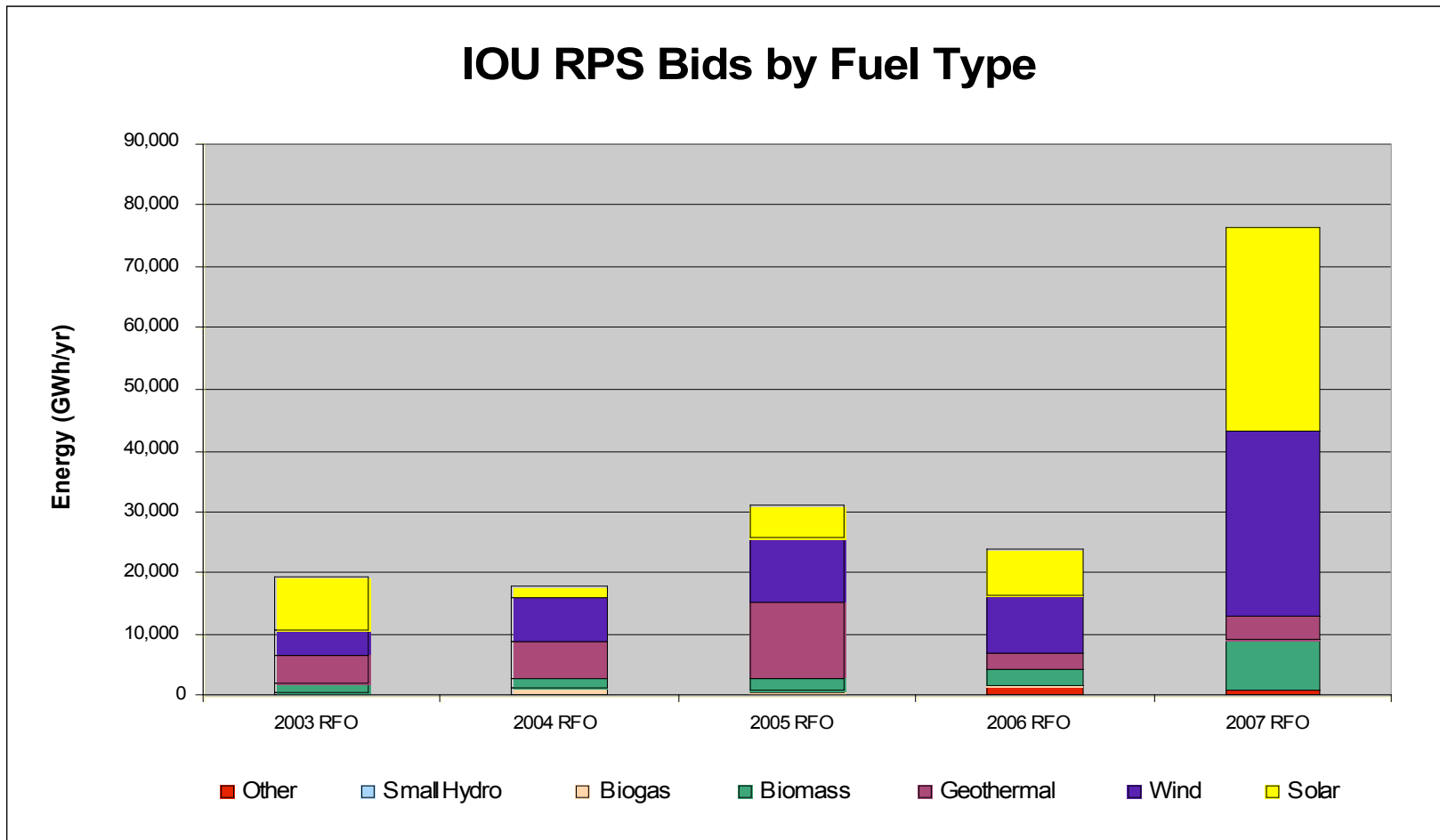
California's Renewables Portfolio Standard (RPS)

- All retail electricity sellers (utilities & ESPs) must procure renewables
 - 20% renewables by 2010 – by law
 - 33% renewables by 2020 – as a policy goal
- CPUC oversees IOU RPS procurement and compliance
- Builds upon California's strong history of renewables procurement through QF Std. Offer contracts in 1980s
 - e.g. 356 MW of concentrated solar installed in early 1980s
- RPS is technology neutral
 - No specific solar goal
 - Many solar projects are in pipeline
 - And in 2007 – we saw large increase in solar projects bidding on RPS contracts



RPS resource mix shifting:

more bids and contracts from solar thermal and PV



Solar RPS Projects

- 9 Solar Thermal - 2800 MW
 - 1450 MW Approved
 - 1350 Pending Approval
- 6 Solar PV = 815 MW
 - 15 MW Approved
 - 800 MW Pending

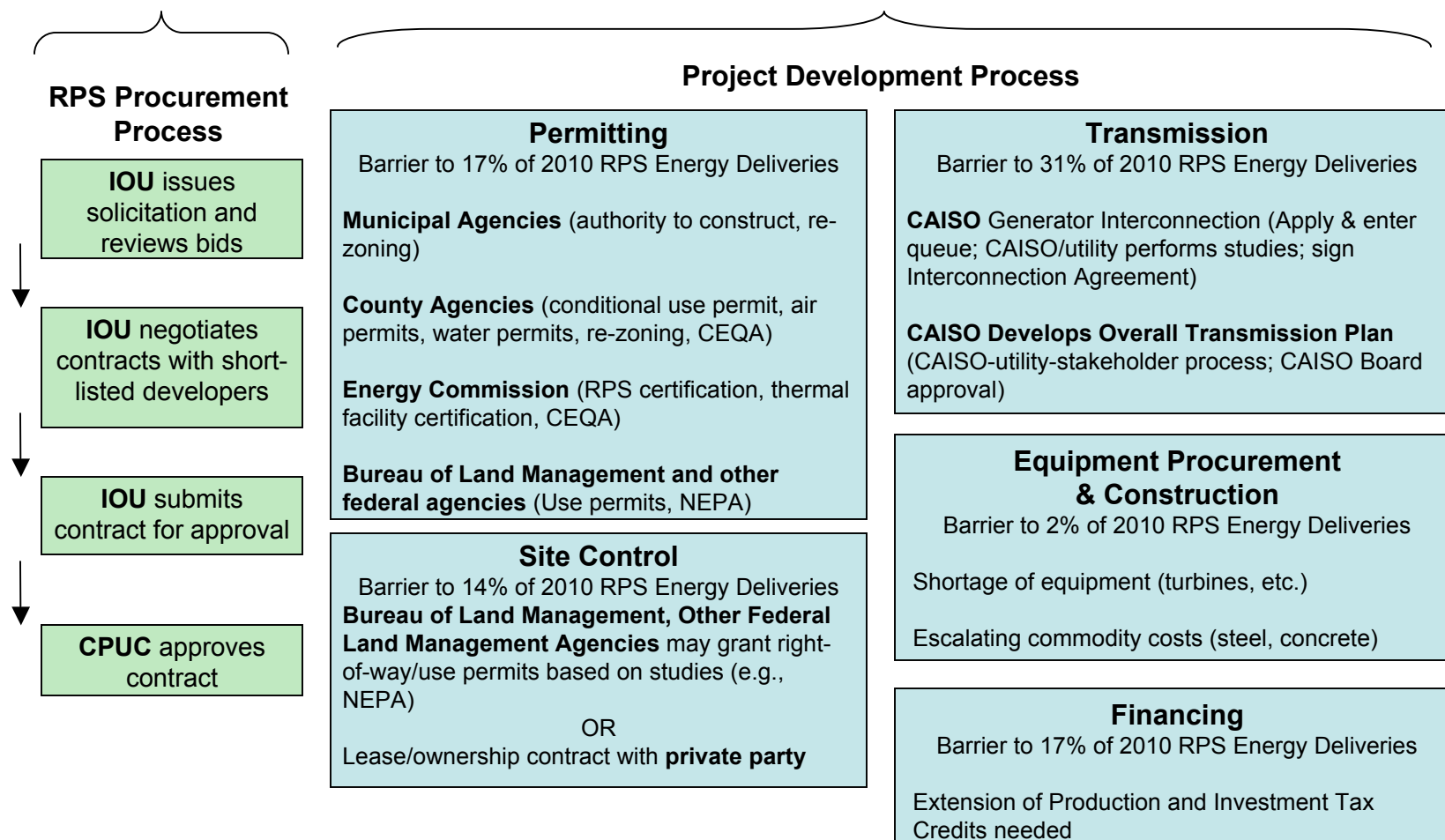


Approved Contracts	Status	IOU	Min MW	Technology	Location	Original Online Date
Bethel Solar #1	Delayed	SDG&E	49	solar thermal	Fillaree Ranch, Imperial Valley	6/1/08
Bethel Solar #2	On schedule	SDG&E	49	solar thermal	Fillaree Ranch, Imperial Valley	12/1/08
Stirling Solar One	On schedule	SCE	500	solar thermal	San Bernardino County	1/31/09
Stirling Solar Two	On schedule	SDG&E	300	solar thermal	Imperial Valley	12/31/10
Solel	On schedule	PG&E	554	solar thermal	Mojave Desert	1/1/11
Green Volts	On schedule	PG&E	2	solar PV	Byron	10/1/08
CA Sunrise #1	On schedule	SCE	1	solar PV	California City	1/1/09
CalRenew America	On schedule	PG&E	5	solar PV	Mendota	4/1/09
FSE Blythe 1	On schedule	SCE	7.5	solar PV	Blythe, CA	10/23/09
Ausra	Pending approval	PGE	177	solar thermal	San Luis Obispo County	8/31/10
San Joaquin Solar 1 & 2	Pending approval	PGE	106.8	solar thermal	Coalinga, CA	6/30/11
BrightSource	Pending approval	PGE	900	solar thermal	Mojave, CA and NV	12/31/11
Gaskell Sun Tower (eSolar)	Pending approval	SCE	175	solar thermal	Kern County, CA	4/1/12

Source: CPUC RPS Website;
<http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/>



RPS Procurement + Development Process



California Solar Initiative



Photo: Don Schramm, P-H-D EnterprisesStadt,
7.74kw STC, May 06, 2008, Stevenson Ranch



Goals

- 3,000 MW of new customer-owned distributed solar
- Self-sustaining solar industry free from ratepayer funded incentives

Budget

- \$3.3 billion budget (2007-2016)
- Split between different utility areas

Long-term policy framework

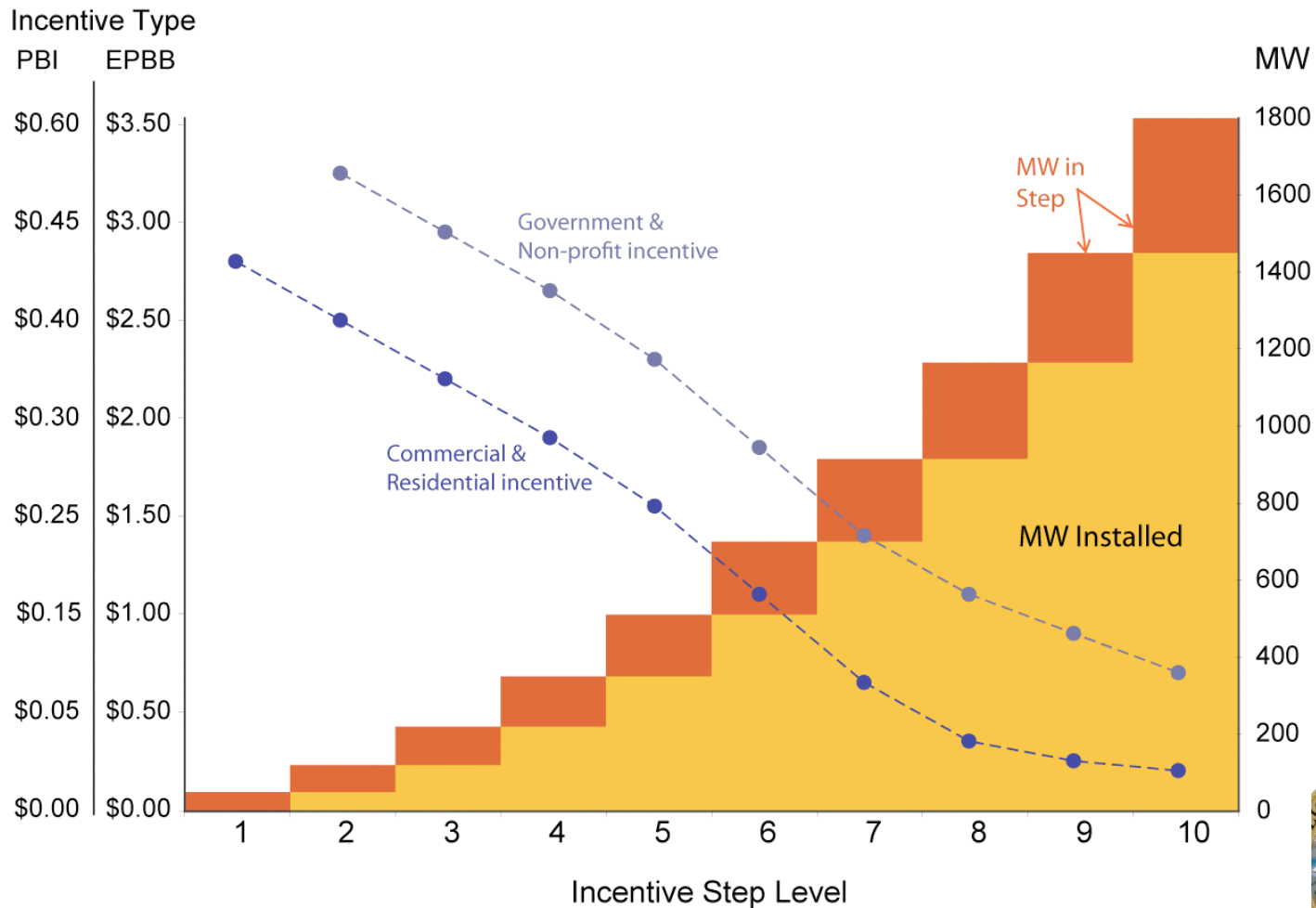
- Uniform incentive eligibility guidelines statewide
- Provides incentives that encourage solar performance
- Incentives decline based on program demand
- Funds customer-side PV and other solar

Other Program Components

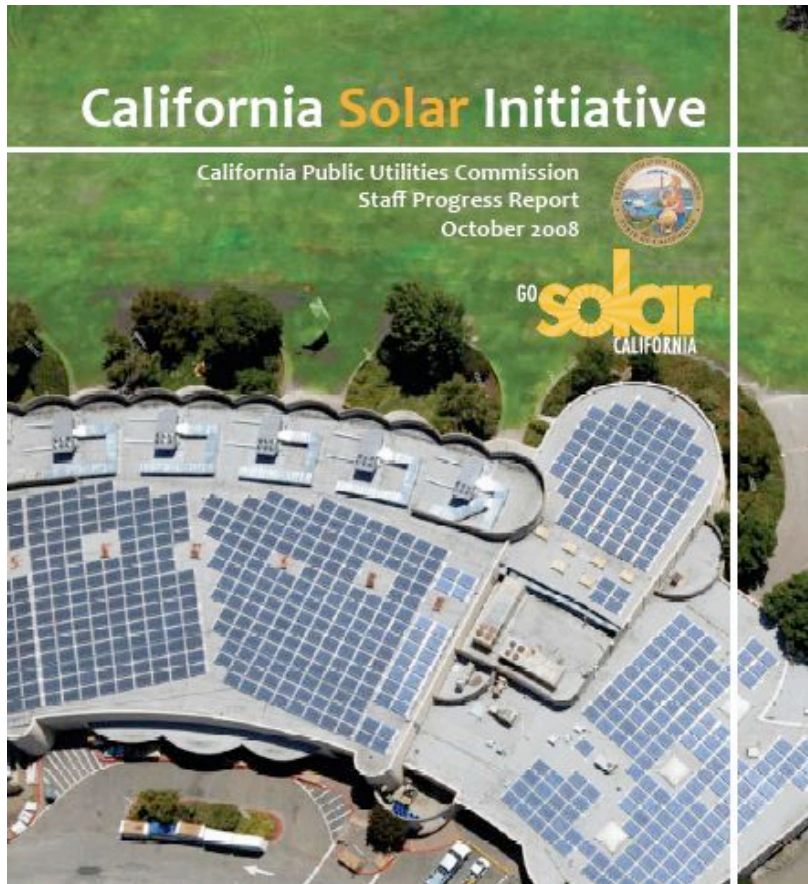
- Low Income Program
- Research & Development Program
- Solar Hot Water Pilot program



Incentives decline as demand grows: CPUC part of program has a goal of 1,750 MW



California Solar Initiative - 2008 Progress



California installed solar year-to-date 2008, CPUC programs only

	# Applications	MW
CSI -PowerClerk	7,118	86 MW
CSI - SGIP Transitional Projects	36	7 MW
CSI Subtotal	7,154	93 MW
SGIP Projects	71	18 MW
Total	7,225	111 MW

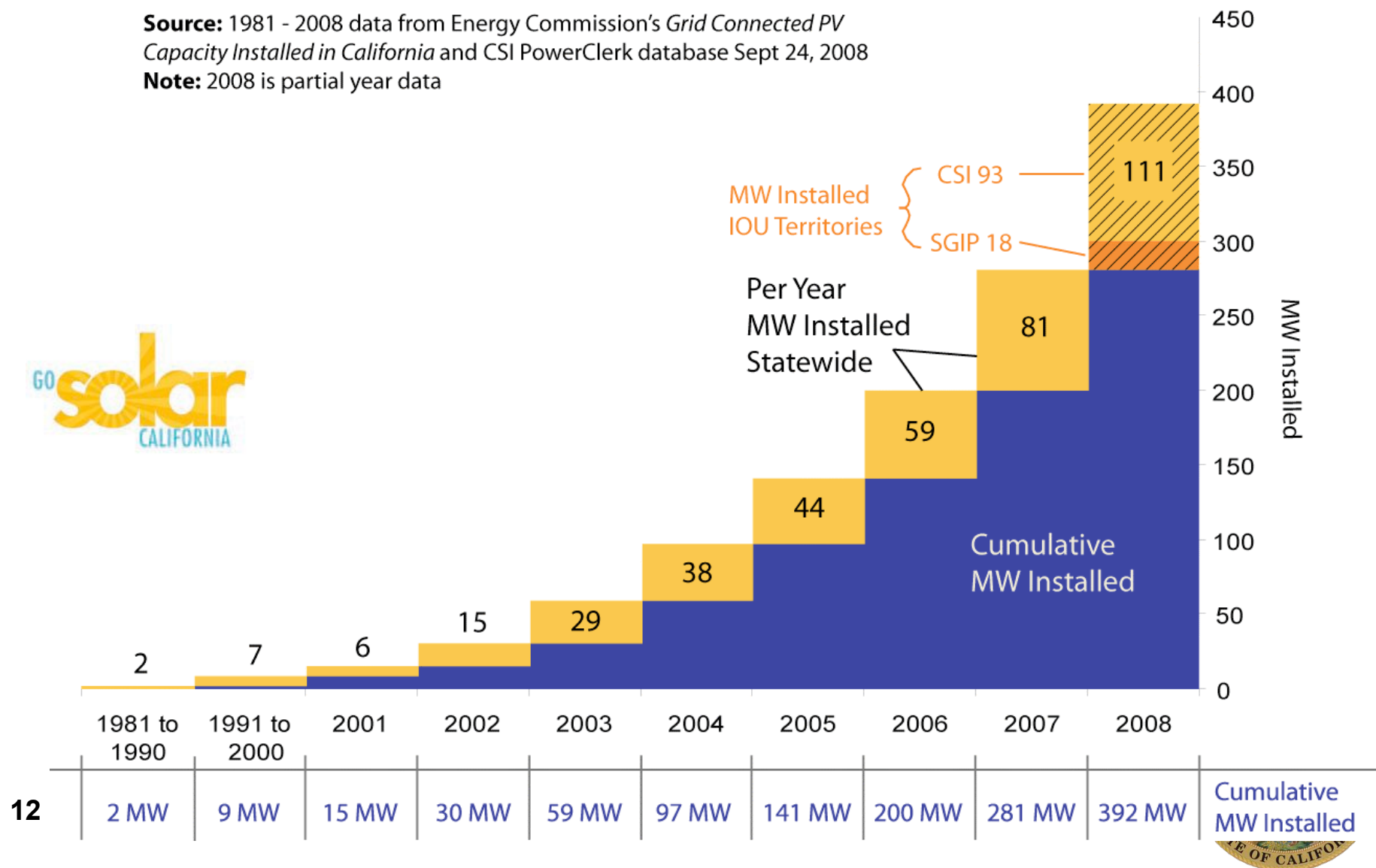
Staff Progress Report available at:
www.GoSolarCalifornia.ca.gov



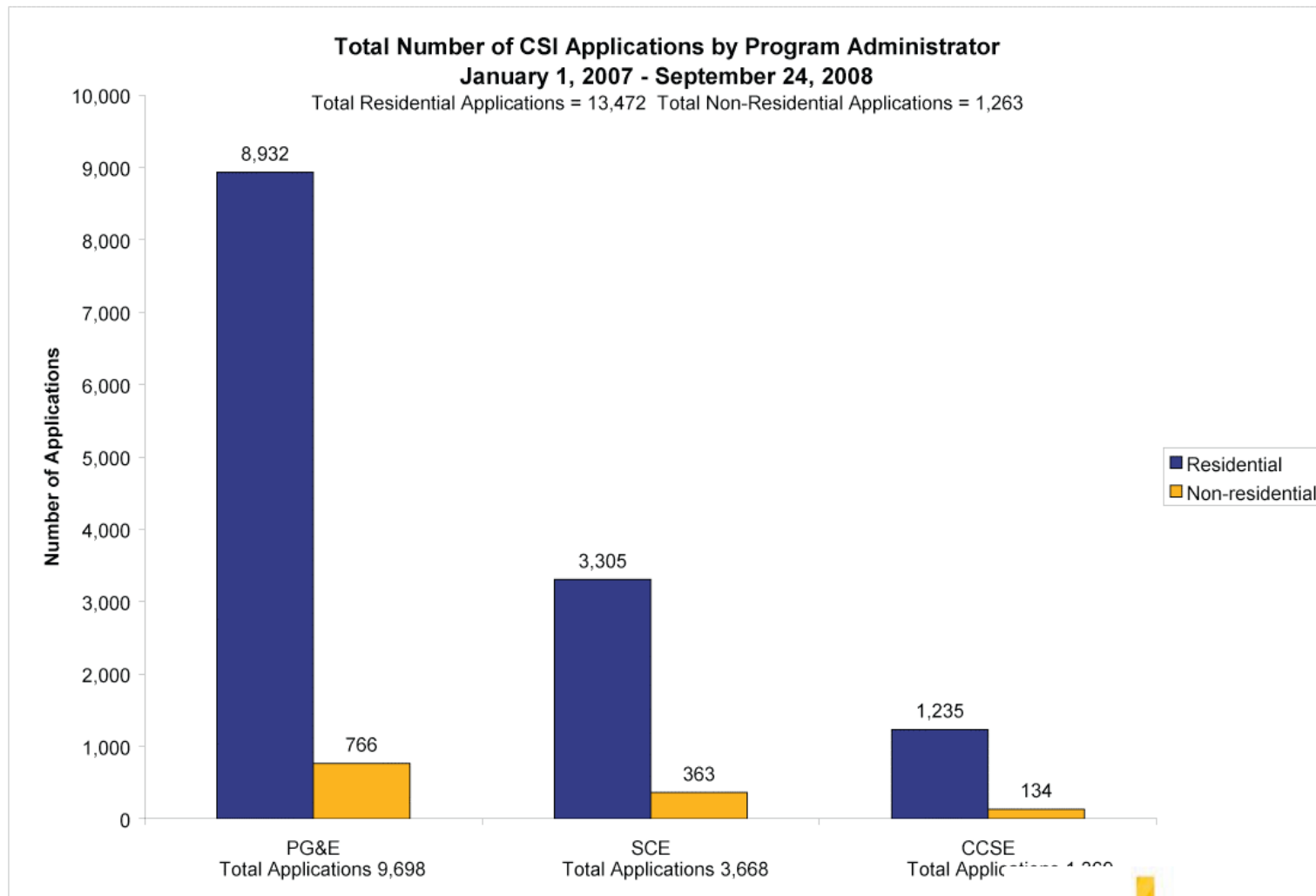
California installed 392 MW PV at 40,000+ sites thru October 2008

Source: 1981 - 2008 data from Energy Commission's *Grid Connected PV Capacity Installed in California* and CSI PowerClerk database Sept 24, 2008

Note: 2008 is partial year data



CSI Applications By IOU Territory



Current Incentive Levels in CA - Oct 2008

Program Month	PG&E			SCE			CCSE		
	Residential	Non-Residential	Govt & Non-Profit	Residential	Non-Residential	Govt & Non-Profit	Residential	Non-Residential	Govt & Non-Profit
Jan 07	Step 2 \$2.50 \$0.39	Step 2 \$2.50 \$0.39	\$3.25 \$0.50	Step 2 \$2.50 \$0.39	Step 2 \$2.50 \$0.39	\$3.25 \$0.50	Step 2 \$2.50 \$0.39	Step 2 \$2.50 \$0.39	\$3.25 \$0.50
Feb									
Mar		Step 3 \$2.20 \$0.34	\$2.95 \$0.37		Step 3 \$2.20 \$0.34	\$2.95 \$0.37			
Apr									
May		Step 4 \$1.90 \$0.26	\$2.65 \$0.37						
Jun									
Jul					Step 4 \$1.90 \$0.26	\$2.65 \$0.37			
Aug	Step 3 \$2.20 \$0.34							Step 3 \$2.20 \$0.34	\$2.95 \$0.37
Sep									
Oct									
Nov									
Dec									
Jan 08							Step 3 \$2.20 \$0.34		
Feb								Step 4 \$1.90 \$0.26	\$2.65 \$0.37
Mar		Step 5 \$1.55 \$0.22	\$2.30 \$0.32		Step 5 \$1.55 \$0.22	\$2.30 \$0.32			
Apr	Step 4 \$1.90 \$0.26								
May				Step 3 \$2.20 \$0.34					
Jun									
Jul									
Aug									
Sept									
Oct							Step 4 \$1.90 \$0.26	Step 5 \$1.55 \$0.22	\$2.30 \$0.32

Incentive Levels

- \$1.90/watt - Residential
 - Except SCE: \$2.20/watt
- \$1.55/watt - Commercial
- \$2.30/watt - Non-Profit/Govt



CaliforniaSolarStatistics.org

California Solar Initiative



Center for
Sustainable Energy
CALIFORNIA



Pacific Gas and
Electric Company*



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1. Select a Chart

Total Capacity By Administrator

2. Select a Date

10-08-2008

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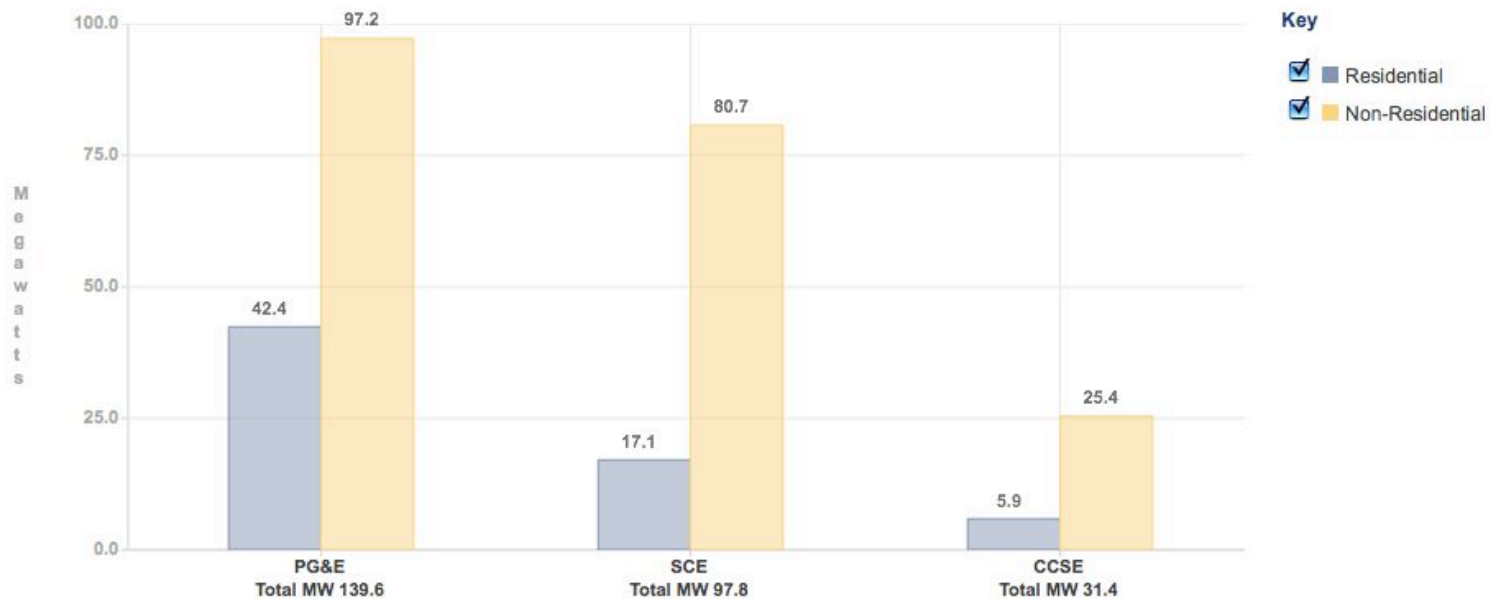
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Total Capacity of CSI Applications, by Program Administrator

[View Chart Only](#)

January 01, 2007 - October 08, 2008

Total Residential MW = 65.4 Total Non-Residential MW = 203.4



Feed-in-Tariff Offered to All Renewables

- Originally only for water/wastewater customers, expanded to include all customers
- All eligible RPS technologies, including solar
- Projects up to 1.5 MW; Considering expansion to 20 MW
- Price set by law at “market price referent” (MPR)
 - Reference point of MPR is a new combined cycle gas plant
 - MPR is adjusted for time and season

IOU	Annual Average (\$ /kWh)	
	MPR	Solar *
PG&E	\$0.09	\$0.11
SCE	\$0.09	\$0.13
SDG&E	\$0.09	\$0.11

* Solar produces largely on peak so receives a slightly higher average rate



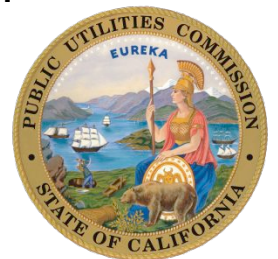
Utility Owned DG Proposals

- **In March 2008, SCE requested approval to spend \$875M to install 250 MW of utility owned distributed rooftop solar**
 - Would be SCE owned
 - Would serve its load at the distribution level (\$3.50/Watt)
 - Would use leased roof space
 - Would contribute to RPS as utility procurement
 - Would be included in ratebase
 - Would be first of its kind utility scale investment
- **Requires CPUC approval**
 - If approved, SCE would go out to bid to see if any suppliers could meet the price
- **In July 2008, SDG&E filed similar application for 77 MW of solar.**



Solar Hot Water

- Current
 - Solar Hot Water Pilot Program in San Diego Gas & Electric Area (Administered by CCSE)
 - Budget of \$1.5 million; Target of 800 systems
 - Funds gas and electric displacing solar hot water systems
- Future
 - Requires further CPUC policy decisions that will be informed by current pilot
 - Gas Displacing Systems
 - AB 1470 (Huffman, 2007) authorizes the CPUC to develop a statewide Solar Hot Water incentive program
 - Budget of \$250 million; Target of \$200,000 systems
 - Funded by gas ratepayers
 - Electric Displacing Systems
 - CSI program could fund SHW under “Non-PV” portion of CSI
 - Funded by electric ratepayers



Additional Information

- CPUC website www.cpuc.ca.gov
- GoSolarCalifornia.ca.gov (Booth 1024)

